NECi: The Nitrate Elimination Company, Inc.
334 Hecla Street, Lake Linden, MI 49945 USA
Toll-free: 888/NITRATE
Int'l phone: 1.906.296.1115
Fax: 1.906.296.8003
Website: www.nitrate.com
Tech Line: 1.906.296.1130
Email: tech@nitrate.com

NECi Cat. LF-NTK-100 Series

Forage Nitrate Test Kit Instructions

Livestock Feed – forage, standing hay, silage

Introduction: This kit contains everything you need to test forage samples. We also provide *snip off* squeeze bulbs with nitrate standard at 1000 ppm nitrate-N (or 4500 ppm nitrate) to help evaluate your results, and so you know the kit is working. This format can be used to run multiples of 4 samples and 1 standard at a time. Collect your plant samples, and then run the tests and at least one standard all at once. Repeat each step for each set of samples you test.

What to Expect: The nitrate value you get will tell you the nitrate content of your plant sample. We can't guarantee the accuracy you would expect from a testing lab. But you *will* get a number you can use for making on-site decisions about plant nitrate content.

Tips & Notes

Store in a cool place (below 72°F/22°C), away from direct sunlight. Refrigerate if possible. The kit can withstand hot summer temperatures for 5 days. *Do not open the sealed packets or mix tube contents until ready to use.*

Plant sampling can be a complex issue by itself. For best results, follow the directions of a Certified Crop Advisor for advice on plant sampling.

Don't forget to record where you got your samples.
Label your samples & tubes!

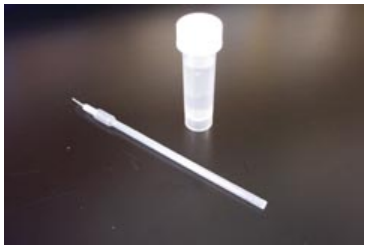
Kit Contents (per 4 samples):
- **4** clear tubes with white screw caps containing 5 ml water
- **4** plastic pans
- **4** clear *twist off* squeeze bulbs (buffer)
- **1** clear *snip off* squeeze bulb containing nitrate standard
- **5** snap cap tubes in sealed foil pouch (this is the enzyme)
- **8** plastic droppers
- **5** foil-sealed square tubes of color reagent powder, plus caps
- **1** cardboard test tube holder

You'll need:
- Marker for labeling tubes and samples
- Scissors to *snip off* end of 1 squeeze bulb with standard
- Garlic press or pliers
- Pen for recording data on data sheet!

Step 1: Get your samples

Use a garlic press or a clean pair of pliers to squeeze several drops of plant juice into one of the pans provided.
Repeat for each plant sample. Use a clean pan for each sample. Clean and dry the press or pliers between samples.

Step 2: Sample prep



Add **one drop** (50µl) of plant juice to one of the clear tubes of distilled water (white cap). Recap the tube and shake well. Be sure to **label the tube** and record the sample name on the data sheet. Repeat for each plant sample. Use a clean dropper for each.

Step 3: Prepare your Snap cap tubes.

Remove the **5** snap cap tubes from the foil pouch. Place them in the cardboard test tube holder. Tap the tubes to settle contents. Keep tubes *upright* when open so as not to lose contents.
Set the tube with the blue dot apart from the others. *Snip off* the end of the standard squeeze bulb (above, left) and empty entire contents into the tube with the blue dot: this is the nitrate standard.
Empty entire contents of one *twist off* squeeze bulb (above, right) into each of the other **4** snap cap tubes. These will be your plant sample results. Label the tubes now! Cap all the tubes and shake gently. **Step 4 must follow within 5 minutes.**

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Notes

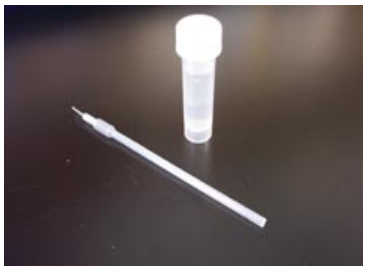
Be sure you have labeled the snap cap tubes in Step 3 to match the plant extract drop you are adding here in Step 4.

Add only one drop!
Step 4 must follow within 5 minutes of Step 3.
You can let this step go as long as you want to, but **wait at least 10 minutes**, with shaking, before going on to Step 5.

The Color is stable for a few days. You can keep the tubes to look at later.

This kit has been designed with nonhazardous reagents. It is safe to dispose of the liquids down the drain or on the ground. Spills can be wiped up with water and will not harm the skin. As with any household product, we do recommend you keep our Nitrate Test Kits out of the reach of children.

Step 4: Add samples from Step 2 to the snap cap tubes in the holder.



Use a clean dropper to take some liquid from near the surface of the clear tube. Add ***one drop*** (50 µl) of this liquid to one of the **snap cap tubes**. Make sure not to touch the sides or surface of the liquid with the dropper. **Repeat** for all **4** samples, using a different dropper for each sample. Recap the snap cap tubes and shake gently. Let all the **snap cap tubes** set for at least **10 minutes**, shaking gently every few minutes.

Step 5: Color development

After at least **10 minutes**, pour the contents of the snap cap tube with the blue dot into one of the **square foil covered tubes** with the blue dot (the nitrate standard). Pour the contents of each of the other **4** tubes into the appropriately labeled square tube. Try to get most of the liquid transferred. Firmly seal with a square cap and shake rapidly. Let this tube develop for about 5 minutes, shaking it several times to try to dissolve most of the powder.

Evaluating your results:

The nitrate standard should have a clear pink color. Your sample results may be slightly cloudy, but you will see the pink color if enough nitrate is present. The nitrate standard is set at 1000 parts per million nitrate-N (1000 ppm nitrate-N), or 4500 parts per million nitrate (4500 ppm nitrate). Compare your results to the standard by holding your samples and the standard against a white background. Determine whether your samples are less than, nearly the same, or greater than the nitrate standard color.

	Form of Nitrate Reported		Recommendation For Feeding
Color ppm NO_3-N	**NO_3-N** (Nitrate-nitrogen) ppm	**NO_3** (Nitrate) ppm	Notes: ppm = parts per million Conversion factors 1 ppm nitrate-N = 4.4 ppm Nitrate = 0.61 ppm KNO_3
0 ppm	**< 350**	**< 1500**	Generally considered safe for all livestock
400 ppm	**350 - 1000**	**1500 – 5000**	Limit to 50% feed for calves, pregnant or lactating animals
1000 ppm	**1000 - 2500**	**5000 – 10,000**	Limit to 25 – 50 % feed. **Do not feed to pregnant animals.**
2000 ppm	**> 2500**	**> 10,000**	**Caution!** Potentially deadly! Do not feed without mixing with low nitrate sources!

Note that these values are based on wet weight.